Radiation Therapists

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Significant Points

- Good job opportunities are expected; applicants who are certified and who possess a bachelor's or an associate degree or a certificate in radiation therapy should have the best prospects.
- Employment is projected to grow faster than average.
- Radiation therapists need good communication skills because their work involves a great deal of patient interaction.

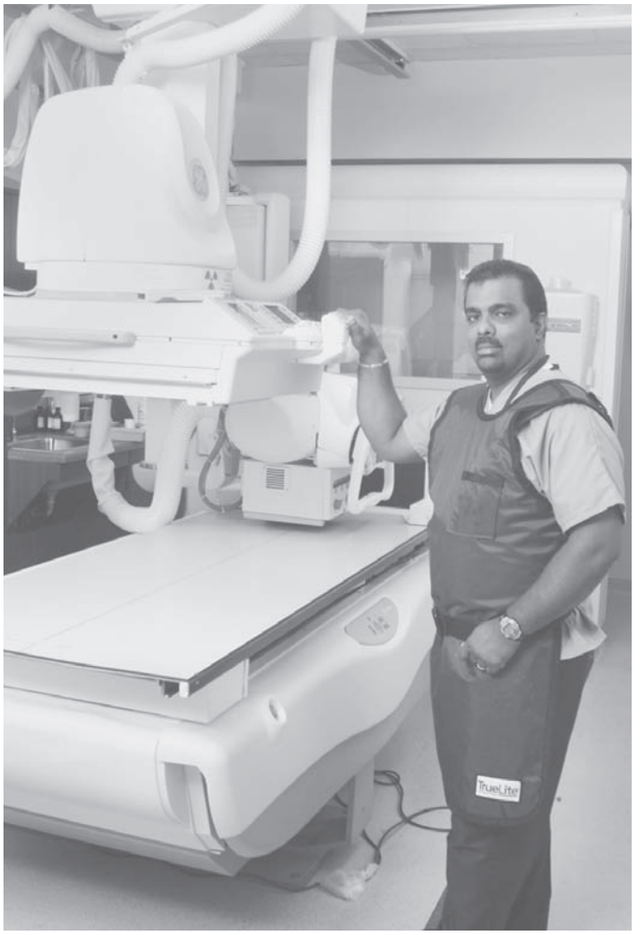
Nature of the Work

Radiation therapy is the use of radiation to treat cancer in the human body. As part of a medical radiation oncology team, radiation therapists use machines—called linear accelerators—to administer radiation treatment to patients. Linear accelerators, used in a procedure called external beam therapy, project high-energy x-rays at targeted cancer cells. As the x-rays collide with human tissue, they produce highly energized ions that can shrink and eliminate cancerous tumors. Radiation therapy sometimes is used as the sole treatment for cancer, but usually is used in conjunction with chemotherapy or surgery.

The first step in the radiation treatment process is called simulation. During simulation, a radiation therapist uses an x-ray imaging machine to pinpoint the location of the tumor. The therapist also may use a computerized tomography or CT scan to help determine how best to direct the radiation to minimize damage to healthy tissue. The therapist then positions the patient and adjusts the linear accelerator so that, during treatment, radiation exposure is concentrated on the tumor cells. The radiation therapist then develops a treatment plan in conjunction with a radiation oncologist (a physician who specializes in therapeutic radiology), and a dosimetrist (a technician who calculates the dose of radiation that will be used for treatment). The therapist later explains the treatment plan to the patient and answers any questions that the patient may have.

After simulation, the radiation therapist positions the patient and adjusts the linear accelerator to mirror the conditions that were established in simulation. Then the therapist leaves the room to administer the radiation treatment. From a separate room that is protected from the x-ray radiation, the therapist operates the linear accelerator and monitors the patient's condition through a TV monitor and an intercom system. Treatment can take anywhere from 10 to 30 minutes and is usually administered once a day, 5 days a week, for a period of 2 to 9 weeks.

During the treatment phase, the radiation therapist monitors the patient's physical condition to determine if any adverse side effects are taking place. In addition, the therapist must be aware of the patient's emotional condition. Because many patients are under stress, and are emotionally fragile, it is important for the therapist to maintain a positive attitude and provide emotional support. Radiation therapists also must keep detailed records of their patients' treatments. These records include information such as the dose of radiation used for each treatment, the total amount of radiation used to date, the area treated, and the patient's reactions. Radiation oncologists and dosimetrists review these records to ensure that the treatment plan is working, to monitor the amount of radiation exposure that the patient has received, and to keep unwanted side effects to a minimum.



Radiation therapists use machines called linear accelerators to administer radiation treatment to patients.

Radiation therapists also assist medical radiation physicists, who keep the linear accelerator working. Because radiation therapists often work alone during the treatment phase, they need to be able to check the linear accelerator for problems and make any adjustments that are needed. Therapists also may assist dosimetrists, who calculate the amount of radiation for each treatment. Therapists may perform the routine aspects of this process, called dosimetry, which involves complex mathematical computations.

Working Conditions

Radiation therapists work in hospitals or in cancer treatment centers. These places are clean, well lighted, and well ventilated. Therapists do a considerable amount of lifting and must be able to help disabled patients get on and off treatment tables. Therapists also work on their feet most of the time. Therapists generally work 40 hours a week, and, unlike other health care occupations, they normally work only during the day. However, because radiation therapy emergencies do occur, some therapists are required to be on call and may have to work outside of their normal hours.

Because they work around radioactive materials, radiation therapists take great care to ensure that they are not exposed to dangerous levels of radiation. Following standard safety procedures can prevent overexposure.

Training, Other Qualifications, and Advancement

Employers generally require applicants to complete an associate or a bachelor's degree program in radiation therapy. Individuals also may become qualified by completing an associate or a bachelor's degree program in radiography, which is the study of radiological imaging, and then completing a 12-month certificate program in radiation therapy. Radiation therapy programs have core courses on radiation therapy procedures and the scientific theories behind these procedures. In addition, such programs often include courses on human anatomy, human physiology, physics, algebra, precalculus, writing, public speaking, computer science, and research methodology.

Some States require that radiation therapists be licensed by a State accrediting board. Some States, as well as many employers, also require that radiation therapists be certified by the American Registry of Radiologic Technologists (ARRT). In order to become ARRT-certified, an applicant needs to complete an accredited radiation therapy program, adhere to ARRT ethical standards, and pass the ARRT certification examination. In 2005 there were 94 accredited radiation therapy programs. While enrolled in an accredited radiation therapy program, students who wish to become ARRT-certified must take classes that are related to the subject matter of the certification examination. The certification examination covers radiation protection and quality assurance, clinical concepts in radiation oncology, treatment planning, treatment delivery, and patient care and education. Candidates also must demonstrate competency in several clinical practices, which include patient care activities; simulation procedures; dosimetry calculations; fabrication of beam modification devices; low-volume, high-risk procedures; and radiation treatment procedures.

AART certification is valid for 1 year, after which therapists must renew their certification. Requirements for renewal include abiding by the ARRT ethical standards, paying the annual dues, and satisfying the continuing education requirements. Continuing education requirements must be met every 2 years and include either the completion of 24 credits of radiation therapy-related courses or the successful attainment of ARRT certification in a discipline other than radiation therapy. Renewed certification, however, may not be required by all States or employers that require initial certification.

Individuals interested in becoming radiation therapists should be psychologically capable of working with cancer patients. They should be caring and empathetic because they work with patients who are ill and under stress. Individuals also need good communication skills because their work involves a great deal of patient interaction. They should be able to keep accurate, detailed records. They also should be physically fit because they work on their feet for long periods and lift and move disabled patients.

Experienced radiation therapists may advance to manage radiation therapy programs in treatment centers or other health care facilities. Managers generally continue to treat patients while taking on management responsibilities. Other advancement opportunities include teaching, technical sales, and research. With additional training and certification, therapists also can become dosimetrists, who use complex mathematical formulas to calculate proper radiation doses.

Employment

Radiation therapists held about 15,000 jobs in 2004. About 84 percent worked in the health care industry, primarily in hospitals and in physicians' offices. Another 13 percent worked for State and local governments.

Job Outlook

Good job opportunities are expected. Applicants who are certified and who possess a bachelor's or an associate degree or a certificate in radiation therapy should have the best prospects.

Employment of radiation therapists is projected to grow faster than the average for all occupations during the 2004-14 period. As the U.S. population grows and ages, demand will increase for radiation treatment. As radiation technology advances, radiation treatment will be prescribed for an increasing proportion of cancer patients. In addition to new jobs created over the projection period, a number of job openings will result as experienced radiation therapists retire or leave the occupation for other reasons.

Earnings

The median annual earnings of radiation therapists in May 2004 were $57,700. The middle 50 percent earned between $47,380 and $69,650. The lowest 10 percent earned less than $38,550, and the highest 10 percent earned more than $83,340. Some employers also reimburse their employees for the cost of continuing education.

Related Occupations

Radiation therapists use advanced machinery to administer medical treatment to patients. Other occupations that perform similar duties include radiation technologists and technicians, diagnostic medical sonographers, nuclear medicine technicians, dental hygienists, respiratory therapists, physical therapy assistants and aides, registered nurses, and physicians and surgeons.

Besides radiation therapists, occupations that build relationships with patients and provide them with emotional support include nursing, psychiatric, and home health aides; counselors; psychologists; social workers; and social and human service assistants.

Sources of Additional Information

Information on certification by the American Registry of Radiologic Technologists and on accredited radiation therapy programs may be obtained from:

➤ American Registry of Radiologic Technologists, 1255 Northland Dr., St. Paul, Minnesota 55120-1155. Internet: **http://www.arrt.org/web**

Information on careers in radiation therapy may be obtained from:

➤ American Society of Radiologic Technologists, 15000 Central Ave., SE., Albuquerque, NM 87123-3917. Internet: **http://www.asrt.org**